

Application No. 10/529,684
In Reply to Office action of August 2, 2007
Confirmation No. 1688

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Amendment to the Claims:

This listing of claims 1-13 will replace all prior versions, and listing of claims in the application. Claims 1-12 have been amended. Claims 13-19 have been added.

Listing of Claims

1. (Currently Amended) A memory ~~Memory~~ device comprising:
an array of bit cells for storing data bits in a corresponding information plane comprising an electro-magnetic material constituting an array of bit locations, the array of bit cells constituting an information plane wherein each of said bit locations includes an electromagnetic material, wherein a magnetic state of said electromagnetic material at said a-bit locations represents location-representing the logical value thereof, and
an array of electro-magnetic sensor elements that are aligned with the bit locations,
~~characterized in that wherein~~ the information plane comprising said array of bit cells is programmable or programmed via a magnetic field induced via a separate magnetic writing device.
2. (Currently Amended) A device ~~Device~~ as claimed in claim 1, wherein the array of electromagnetic sensor elements comprise read-only magnetic sensor elements that are sensitive to, but unable to change, said magnetic state of the electromagnetic material.
3. (Currently Amended) A device ~~Device~~ as claimed in claim 1 ~~or 2~~, wherein the device further comprising ~~comprises~~ a housing for encapsulating the array of electromagnetic sensor elements, which housing has an interface surface for cooperating with a programming surface of the writing device for receiving a ~~said~~

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magnetic field for magnetizing the electromagnetic material at the bit locations.

4. (Currently Amended) A device ~~Device~~ as claimed in claim 1-~~or~~2, wherein the device further comprising ~~comprises~~ a housing for encapsulating the array of electromagnetic sensor elements, which housing has a protective cover for preventing selectively changing said magnetic state at the bit locations via said a magnetic field.

5. (Currently Amended) A device ~~Device~~ as claimed in claim 4, wherein the protective cover comprises a magnetic ~~magnetically~~ shielding material.

6. (Currently Amended) A device ~~Device~~ as claimed in claims 1-~~or~~2, wherein the electromagnetic sensor elements comprise read-write elements that are aligned with further bit locations of said information plane, which read-write elements are sensitive to, and also able to change, said magnetic state of the electro-magnetic material.

7. (Currently Amended) A device ~~Device~~ as claimed in claim 6, wherein the read-only sensor elements and the read-write elements are arranged in a single array.

8. (Currently Amended) A writing ~~Writing~~ device for programming a memory device as claimed in claim 1, characterized in that wherein the writing device comprises:

a programming surface for cooperating with the information plane of the memory device, and

means for generating a magnetic field via controllable radiation beams at the programming surface for magnetizing the electromagnetic material at each bit location of the array of bit locations of the information plane.

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9. (Currently Amended) A writing ~~Writing~~ device as claimed in claim 8, wherein for ~~programming a memory device as claimed in claim 3, characterized in that the~~ programming surface is arranged for cooperating with ~~the an~~ interface surface of the a housing of the memory device.

10. (Currently Amended) A writing ~~Writing~~ device as claimed in claim 8 or 9, wherein the means for generating a magnetic field comprise at least one of the following: an array of individually controllable write elements that ~~are individually controllable~~; or an array of permanent magnetic elements; or a magnetic head; ~~and~~ scanning means for scanning the information plane at the programming surface via a magnetic ~~the~~ head.

11. (Currently Amended) A method ~~Method~~ of manufacturing a memory device as claimed in claim 4, the method comprising: ~~a step of~~

- (a) constructing an information plane comprised of an array of bit cells at predefined bit locations, wherein each bit cell is programmable or programmed via a magnetic field induced via a separate magnetic writing device;
- (b) providing a predetermined amount of magnetic material at each bit cell;
- (c) constructing an array of electro-magnetic sensor elements that are aligned with the bit locations of the array of bit cells,
a step of magnetizing the electromagnetic material at the bit locations of the memory device according to predefined data;
- (d) programming the information plane via a separate writing device via magnetization of the electromagnetic material at the bit locations of the information plane; and

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(e) providing the memory device in a housing, said housing providing a protective cover for preventing selectively changing said magnetic state at the bit locations via said magnetic field
~~—magnetizing on the electromagnetic material at the bit locations according to predefined data before encapsulating the device.~~

12. (Currently Amended) ~~A method~~ Method of programming a memory device as ~~claimed in claim 1 using an external a writing device as claimed in claim 8,~~ the method comprising the step of:

- (e) aligning a programming surface of said memory device over an information plane of said memory device to be programmed to achieve a one to one alignment of bit locations of the information plane and field generator elements of said external writing device; and
- (f) generating, via the field generator elements, a magnetic field at the bit locations to magnetize ~~magnetizing~~ the electromagnetic material at the bit locations of the memory device according to predefined data ~~date~~.

13. (New) A device as claimed in claim 1, wherein said device is fully M-RAM compatible.

14. (New) A method of programming a memory device as claimed in claim 12, wherein said alignment is performed via one of: active alignment utilizing one or more actuators, optical sensing via optical markers provided on said memory device.

15. (New) A method of manufacturing a memory device as claimed in claim 11, wherein the protective cover comprises a magnetic shielding material.

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16. (New) A method of manufacturing a memory device as claimed in claim 11, wherein the protective cover comprises a magnetic shielding material.
17. (New) A method of manufacturing a memory device as claimed in claim 11, wherein the array of electromagnetic sensor elements comprise read-only magnetic sensor elements that are sensitive to, but unable to change, said magnetic state of the electromagnetic material.
18. (New) A method of manufacturing a memory device as claimed in claim 1, wherein the electromagnetic sensor elements comprise read-write elements that are aligned with further bit locations of said information plane, which read-write elements are sensitive to, and also able to change, said magnetic state of the electro-magnetic material.